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Jawaharlal Nehru

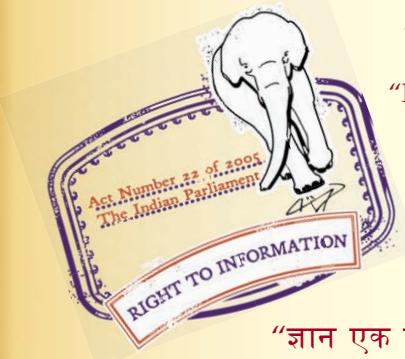
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IS 8370 (1977): Iron powder for powder metallurgical applications [MTD 25: Powder Metallurgical Materials and Products]

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Bhartṛhari—Nītiśatakam

“Knowledge is such a treasure which cannot be stolen”



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Indian Standard
**SPECIFICATION FOR
IRON POWDERS FOR POWDER
METALLURGICAL APPLICATIONS**
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SPECIFICATION FOR IRON POWDERS FOR POWDER METALLURGICAL APPLICATIONS

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Indian Standard

SPECIFICATION FOR IRON POWDERS FOR POWDER METALLURGICAL APPLICATIONS

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 25 February 1977, after the draft finalized by the Powder Metallurgical Materials and Products Sectional Committee had been approved by the Structural and Metals Division Council.

0.2 Iron powder is used for various applications like welding electrode coating, gas cutting, sintered bearings and structural components for various equipments.

0.3 This standard contains clauses 4.1.1, 5.1 and 8.1 which call for agreement between the purchaser and the manufacturer.

0.4 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard specifies the requirements of iron powders, used in the manufacture of sintered metal parts and bearings.

2. SUPPLY OF MATERIAL

2.1 General requirements relating to the supply of iron powder shall be as laid down in IS : 1387-1967†.

3. GRADES

3.1 The material shall be of two grades, namely, Grade 1 and Grade 2. The manufacturer shall specify the method of production of iron powder.

*Rules for rounding off numerical values (*revised*).

†General requirements for the supply of metallurgical materials (*first revision*).

4. CHEMICAL COMPOSITION

4.1 The chemical composition of the material shall be as given in Table 1.

4.1.1 The methods of chemical analysis shall be as agreed to between the purchaser and the manufacturer till appropriate Indian Standards for methods of chemical analysis are formulated by ISI.

4.1.2 The hydrogen loss shall be determined in accordance with IS : 5644-1970*.

4.1.3 Acid-Insoluble Content — The acid-insoluble content shall be determined in accordance with IS : 7438-1974†.

TABLE 1 CHEMICAL COMPOSITION

(Clause 4.1)

SL No.	CONSTITUENT	REQUIREMENT FOR	
		Grade 1 Percent, Max	Grade 2 Percent, Max
(1)	(2)	(3)	(4)
i)	Carbon	0.02	0.02
ii)	Sulphur	0.015	0.005
iii)	Phosphorus	0.015	0.01
iv)	Hydrogen loss	0.3	0.3
v)	Acid insolubles	0.2	0.1

5. SIEVE ANALYSIS

5.1 The sieve analysis of the material when carried out in accordance with IS : 5461-1969‡ shall be as given below; for size between -45 and +150 microns the value shall be as agreed to between the purchaser and the manufacturer:

Grade 1

Sieve Size Micron	Percent of Powder Max
+ 212	Nil
+ 180	0.5
+ 150	2
- 45	15 to 20

*Method for determination of hydrogen loss of copper, tungsten and iron powders.

†Method of test for acid-insoluble content of copper and iron powders.

‡Method for sieve analysis of metal powders.

Grade 2

<i>Sieve Size</i>	<i>Percent of Powder</i>
<i>Micron</i>	<i>Max</i>
+ 212	Nil
+ 180	2
+ 150	3 to 10
- 45	20 to 35

6. PHYSICAL PROPERTIES

6.1 Apparent Density — The apparent density of different grades of material when tested in accordance with IS : 4848-1968* shall be as given below:

<i>Grade</i>	<i>Apparent Density</i> <i>g/cm³</i>
1	2.4 to 2.7
2	2.7 to 3.0

6.2 Flow Rate — The flow rate of Grades 1 and 2 material when determined in accordance with IS : 4840-1968† shall not be more than 32 s/50 g.

6.3 Compressibility — Unlubricated powder when pressed with a pressure of 400 N/mm² in accordance with IS : 4857-1968‡ should attain a minimum 6.2 g/cm³ green density.

6.3.1 Powder particles should not be spherical and preferably of irregular shape.

7. SAMPLING

7.1 The sampling of powders for conducting the various tests shall be done in accordance with IS : 6492-1972§.

8. PACKING

8.1 The material shall be supplied packed in suitable containers in quantities mutually agreed to between the purchaser and the manufacturer.

9. MARKING

9.1 Each container of iron powder shall be suitably marked to identify the name or trade-mark of the manufacturer, grade and mass.

*Method for determination of apparent density of powders for powder metallurgical purposes.

†Method for determination of flow rate of powders for powder metallurgical purposes.

‡Method for determination of compressibility of ductile metal powders

§Methods for sampling of powders for powder metallurgical purposes.

9.1.1 The material may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.